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Cell staining by novel derivatives of fluorescent rhodamine dyes

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Abstract

Two novel precursors of fluorescent dyes (PFD813 and PFD814) have been studied for their ability to photo-activation, transfer across the biomembrane and cells staining. The fluorescent dyes Rho813 and Rho814 formed by photo-activation of their precursors PFD813 and PFD814 inside cells were used for the optical detection of particular features in vitro (HaCat cells, human epithelial carcinoma A431, epidermoid carcinoma of the cervix HeLa and chinese hamster ovary CHO cells). One of the possibilities to visualize and track the pathways of macromolecules or organelles in a "living" cell is to monitor them after staining with these PFDs during the real time measurements. A bright fluorescent signal from the photoactivated dye molecules inside the small spot in the cell can be monitored during their movement into the cell dark region (where the dye was not activated and did not fluoresce). The obtained data are important for further application of these precursors of the fluorescent dyes ("caged" dyes) for microscopic probing of biological objects.

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Keywords

Biomembranes, Cell staining, Fluorescent dyes, Monolayers, Photo-activation